



MicroSatellite Free Flyers (MSat-FF)

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Objectives:

- ♦ Develop and demonstrate Microsatellite Free Flyer payloads, systems and technologies to facilitate utilization for multi-center, multi-discipline Advanced Capabilities applications
- ♦ Define and develop three elements to allow for immediate proof-of-concept payload and establishment of platform:
 - **Integrated Free Flyer Planning and Definition:** Define platform concepts and solicitation approach, engage multi-center participation.
 - **MicroSat Free Flyer Payloads and Missions:** Develop and fly first PI-led-science payload, PharmaSat, in 2008 and start next phase.
 - **MicroSat Systems and Architectures:** Define, prototype and demonstrate MicroSat systems, architectures and technologies to allow for multi-discipline utilization of Free Flyer platform.
- ♦ Demonstrate usefulness of platform to conduct basic and applied life and physical science investigations.

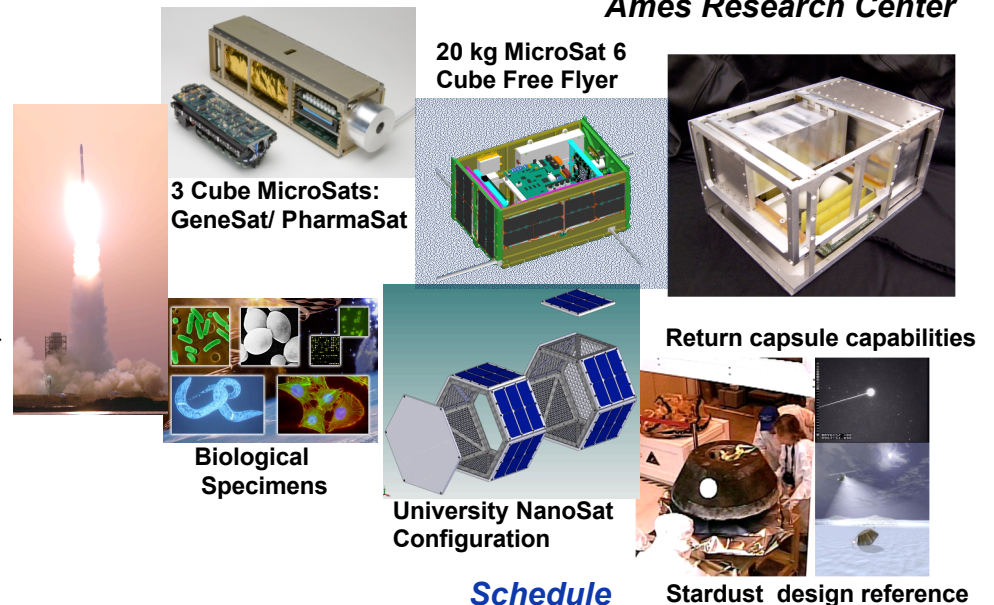
Relevance/Impact:

- ♦ Small, Free Flyer Microsatellites provide a low-cost, rapid development capability for accomplishing peer-reviewed fundamental science investigations and other ESMD and agency objectives.
- ♦ Successful proof-of-concept payload will increase potential for future cost-sharing opportunities with other organizations.
- ♦ Access to space and increased throughput will be maximized by using small, modular secondary payload opportunities.
- ♦ Demonstration of high-fidelity conceptual *in-situ* and return systems architectures will greatly accelerate multi-discipline acceptance/integration/utilization of Free Flyer Microsatellites for Advanced Capabilities and ESMD applications.

Approach:

- ♦ Utilize multi-agency, multi-center, multi-discipline approach to provide maximum efficiencies and leveraging, and facilitate education and workforce development.
- ♦ Rapid prototyping capability in combination with modular, multi-mission systems architecture facilitates fast-track, low-cost mission integration.

Ames Research Center



Key Milestones/Deliverables	Date
Define MicroSat Free Flyer platform concepts and solicitation approach, engage multi-center participation	12/07
Build prototype mechanical model(s) of selected models; define subsystem interfaces	3/07
Develop and fly first proof-of-concept MicroSat payload (PharmaSat) in 2008	6/08
Define, prototype and demonstrate 20 kg MicroSat systems, architectures and technologies to allow for multi-discipline utilization of Free Flyer platform	12/08-12/09
Conduct PI-directed, NRA solicited Spaceflight Missions using nanosatellites and payload elements	12/09-12/11
Using Stardust return capsule as reference, design full fidelity prototype return mission microsatellite system	12/11